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Figure 1

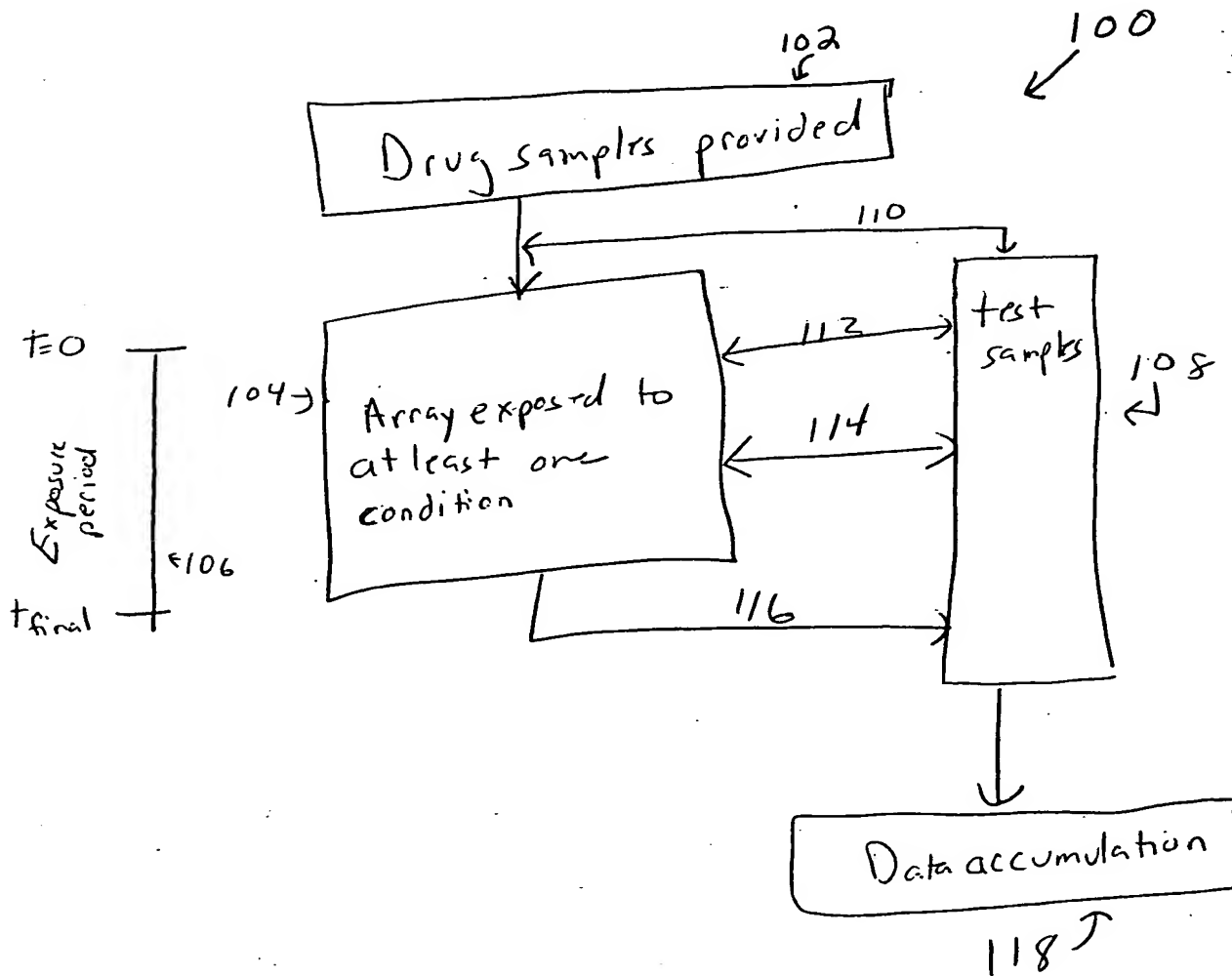


Figure 2

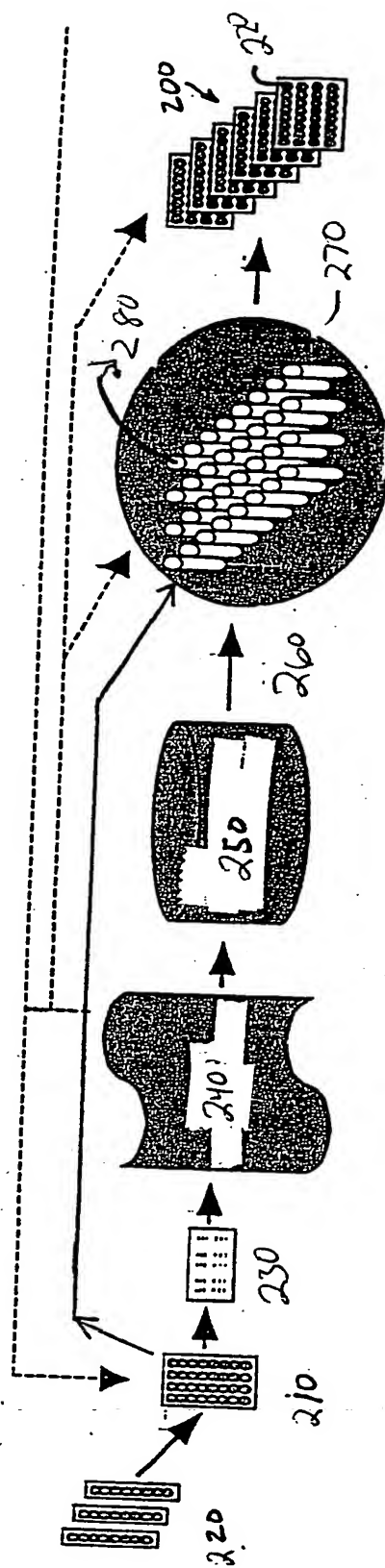
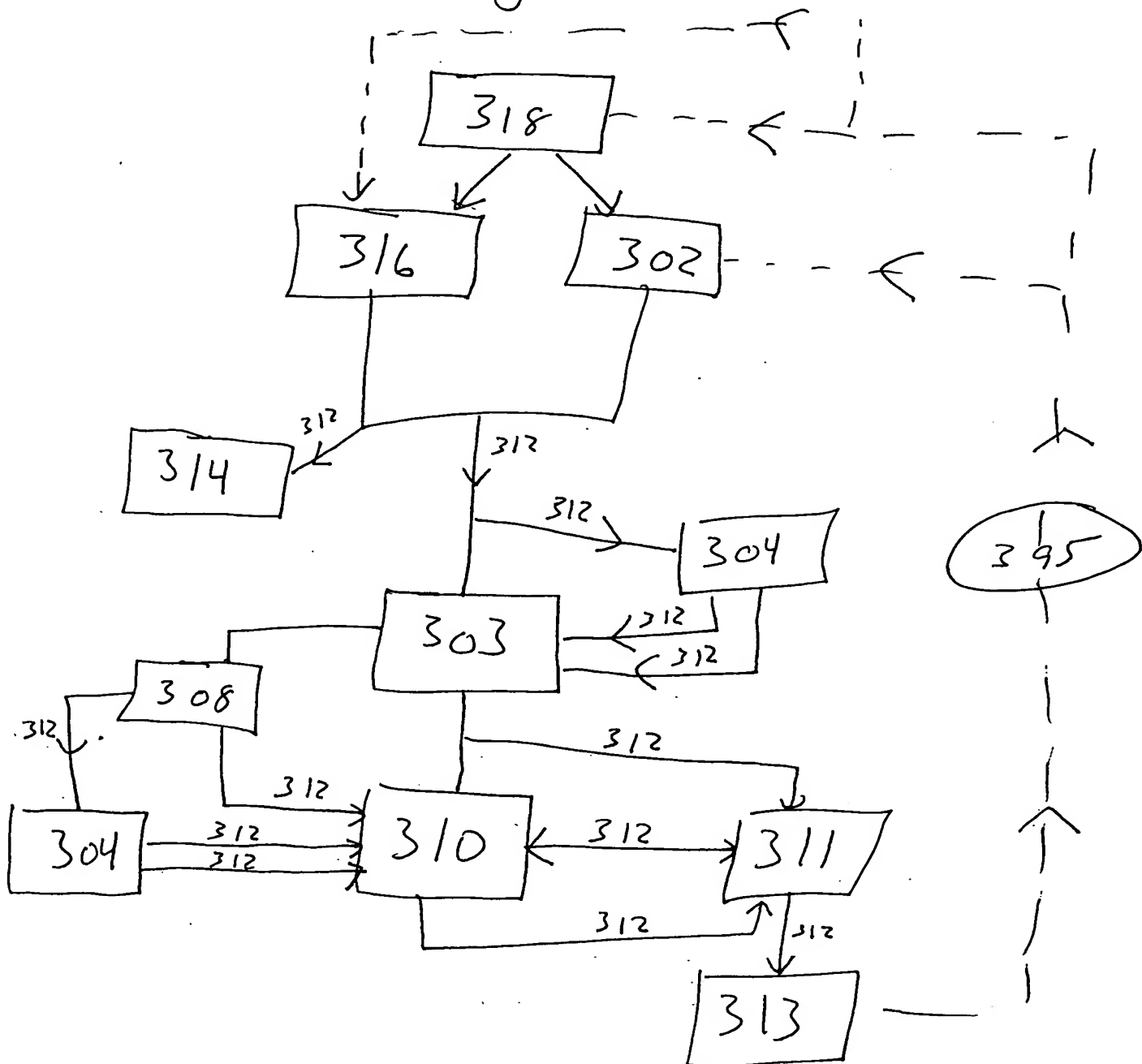


Figure 3



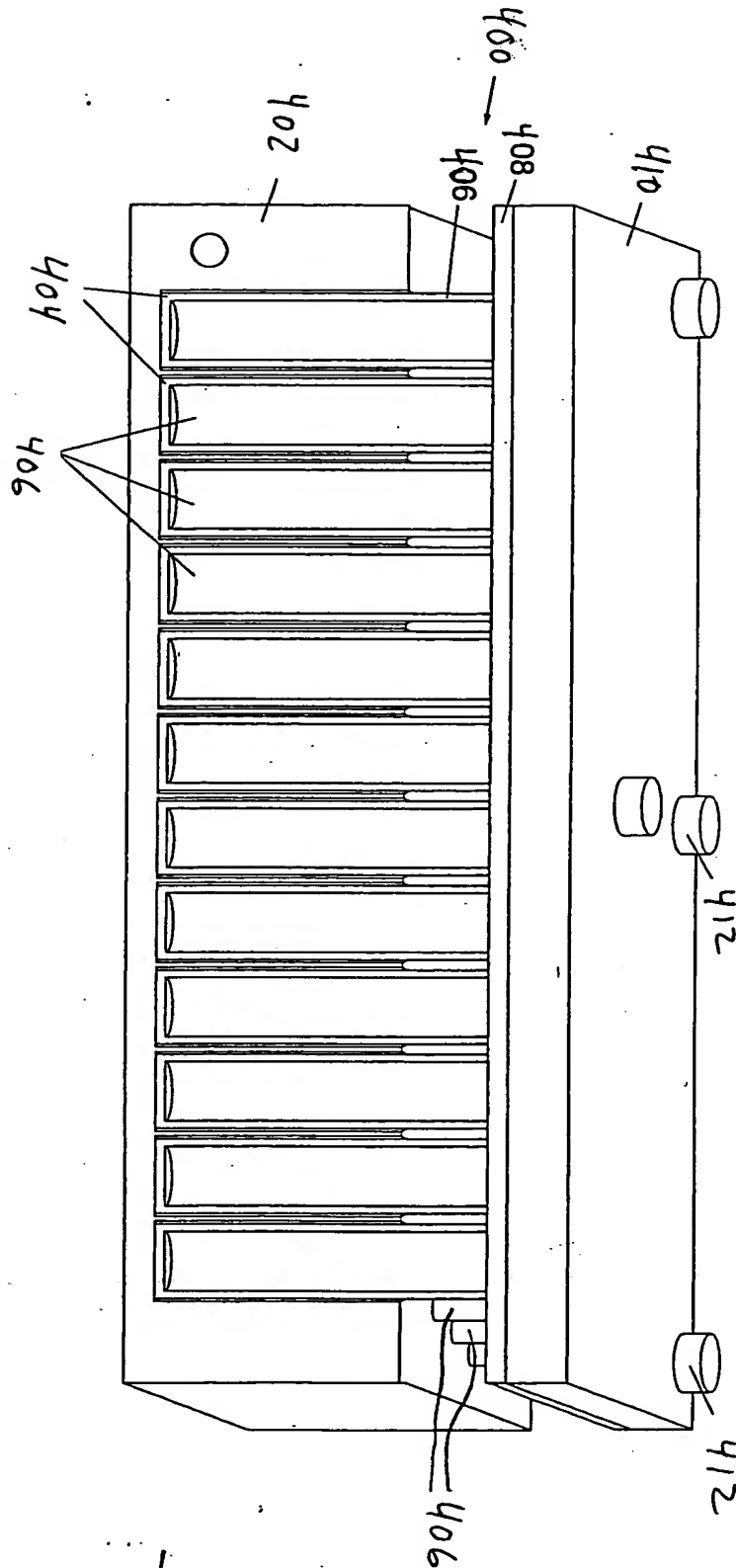
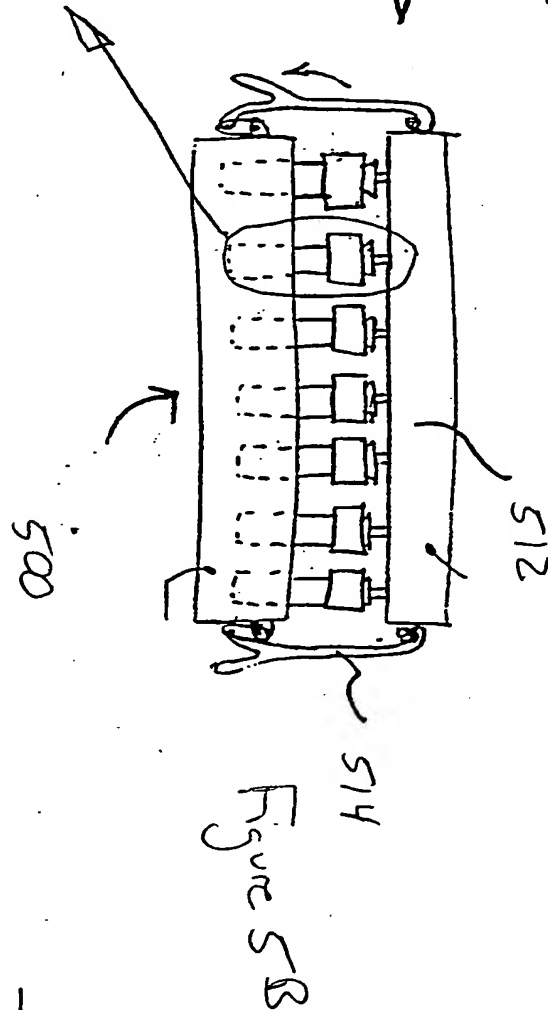
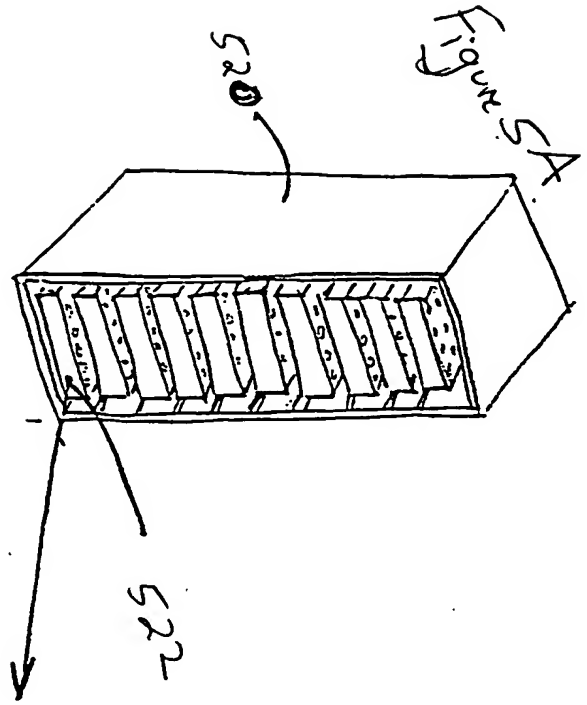
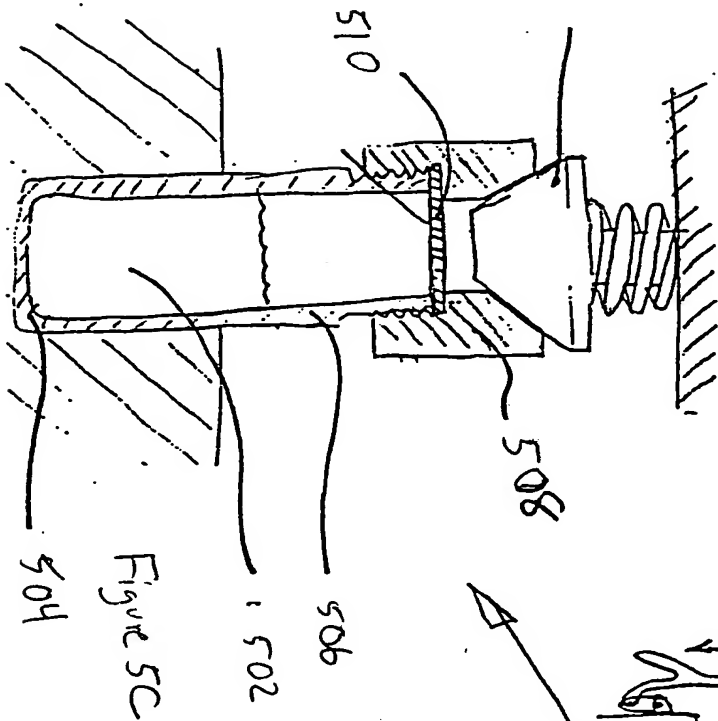
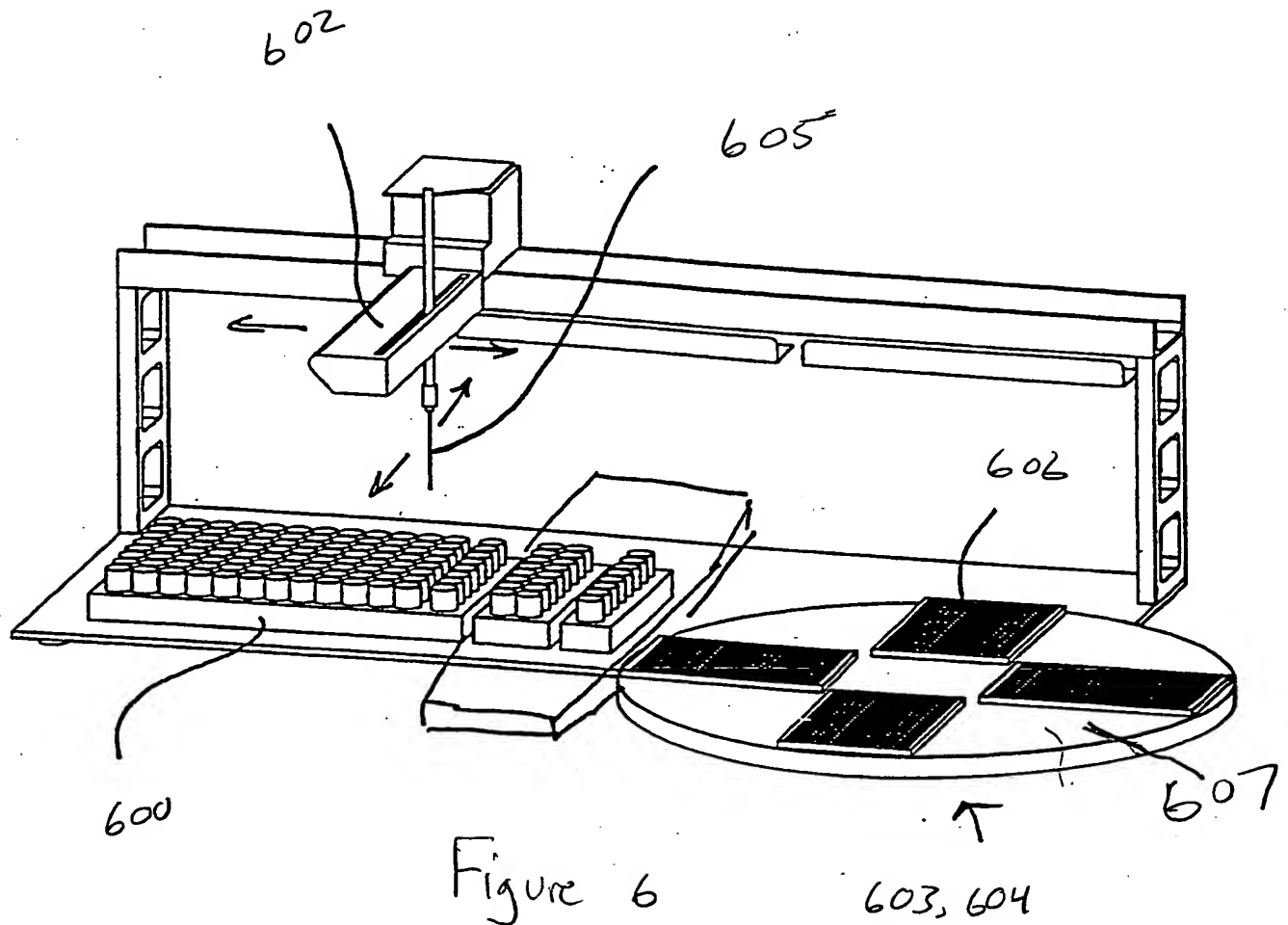


Fig. 4





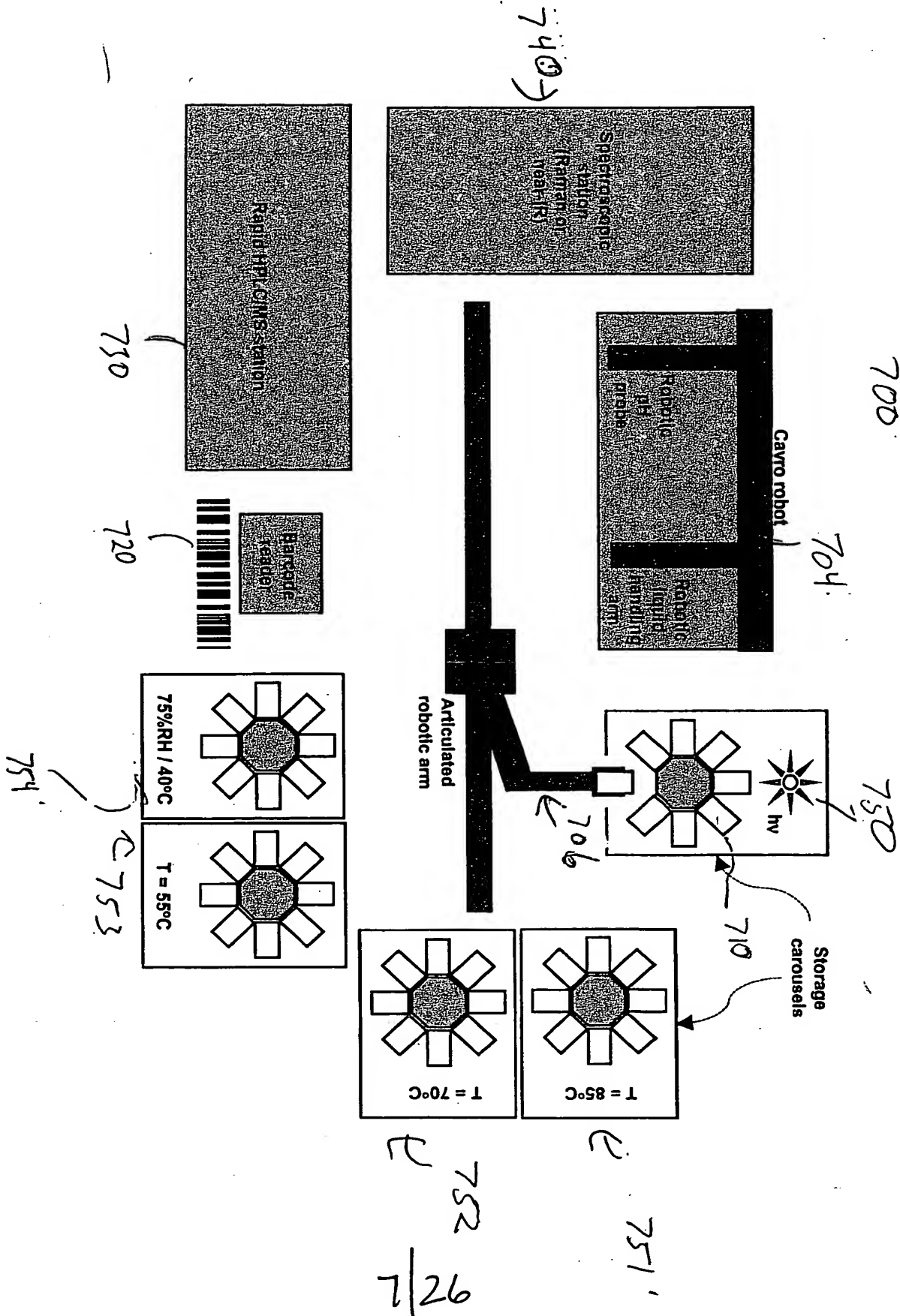


Figure 8A

	1	2	3	4	5	6	7	8	9	10	11	12	
uncontrolled													
A													0.4 mg/mL
B													2.0 mg/mL
C													10.0 mg/mL
D													50.0 mg/mL
E													ethanol (20wt%)
F													propylene glycol (20wt%)
G													10.0 mg/mL AIBN (1eq)
H													HOOH (1eq)

Aqueous solutions with a total volume of 800 uL/well

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Figure 8B

Excipient compatibility – solids formulations

Solids library 1: Diluents and Lubricants

Diluents (7.0 mg)													Lubricants (0.2 mg)
	1	2	3	4	5	6	7	8	9	10	11	12	
A													nothing
B													PEG
C													stearic acid
D						API (1.0 mg)							talc
E													sodium lauryl sulfate
F													zinc stearate
G													calcium stearate
H													magnesium stearate
Diluents (7.0 mg)	nothing	mannitol	sucrose	calcium sulfate	cellulose (MC)	dextrin	D-glucose	fructose	starch	sorbitol	lactitol	lactose	

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Figure 8C
Excipient compatibility – solids formulations

Solids library 2:

Fixed diluent and lubricant with binders, glidants, colorants, acidifiers, alkylizers

	1	2	3	4	5	6	7	8	9	10	11	12	Glitant	Colorant
A	1.0 mg p.c.			5.0 mg Binder			1.0 mg colorant						[nothing]	[nothing]
B	7.0 mg fixed diluent			1 eq pH adjuster			1.0 mg desiccant						silicon dioxide	iron oxide
C	0.2 mg fixed lubricant						1.0 mg glidant						calcium silicate	
D													calcium silicate	
E													calcium silicate	
F													calcium silicate	
G													calcium silicate	
H													calcium silicate	
Binder	[nothing]	citric acid	magnesium oxide	[nothing]	citric acid	magnesium oxide	[nothing]	citric acid	magnesium oxide	[nothing]	citric acid	magnesium oxide	povidone	

dc = drug candidate

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Figure 4D

	1	2	3	4	5	6	7	8	9	10	11	12	
	[DC] = 1 mg/ml 1eq 2eq 5eq			[DC] = 2 mg/ml 1eq 2eq 5eq			[DC] = 10 mg/ml 1eq 2eq 5eq			[DC] = 50 mg/ml 1eq 2eq 5eq			
A													HCl
B													
C													NaOH
D													
E													HOOH
F													
G													AlBN
H													

Total volume = 800uL/well

DC = drug candidate

Figure 8E

Liquids Samples

Chemical stability and excipient compatibility

	1	2	3	4	5	6	7	8	9	10	11	12	10mg/mL V = 800uL	
uncontrolled	pH													
A													co-solvent	
B													[nothing]	
C													ethanol (160)	
D													propylene glycol (160)	
E													glycerin (160)	
F	poloxamer	Capisul	citric acid	lactic acid	sodium phosphate	silicon dioxide	polyvinyl alcohol	sodium alginate	benzonite	atapuligite	poloxamer	Tw een 80	PEG400 (160)	
G	stearic acid	acacia	lecithin	Tw een 80	mono-, di- glycerides	oleic acid	guar gum	dextrin	povidone	magnesium aluminum silicate	HOOH (1eq)	AIBN (1eq)		
H	mannitol	D-glucose	glycerin	dextrose	potassium chloride	sodium chloride	xanthan gum	cellulose (MC)	carboxy methyl cellulose	hydroxy methyl cellulose	HOOH (5eq)	AIBN (5eq)		
wetting/solubilizing agents (8mg)		emulsifying agents (8 mg)												suspending agent (8mg)
sequestering agents (8mg)		tonicity agent (8 mg)												

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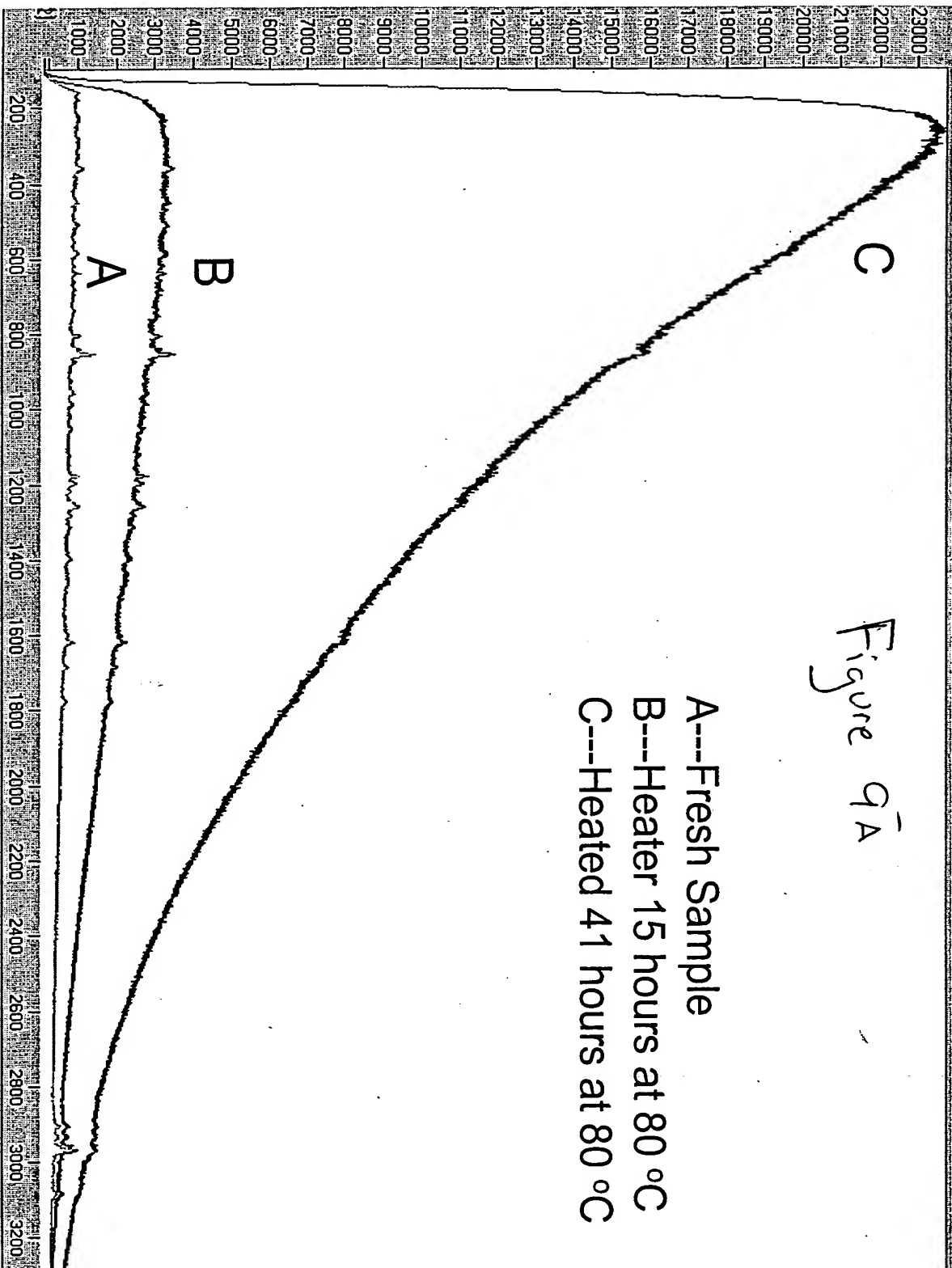
Stability of Amoxicillin by Fluorescence at 632.8 nm

excitation

Figure 9A

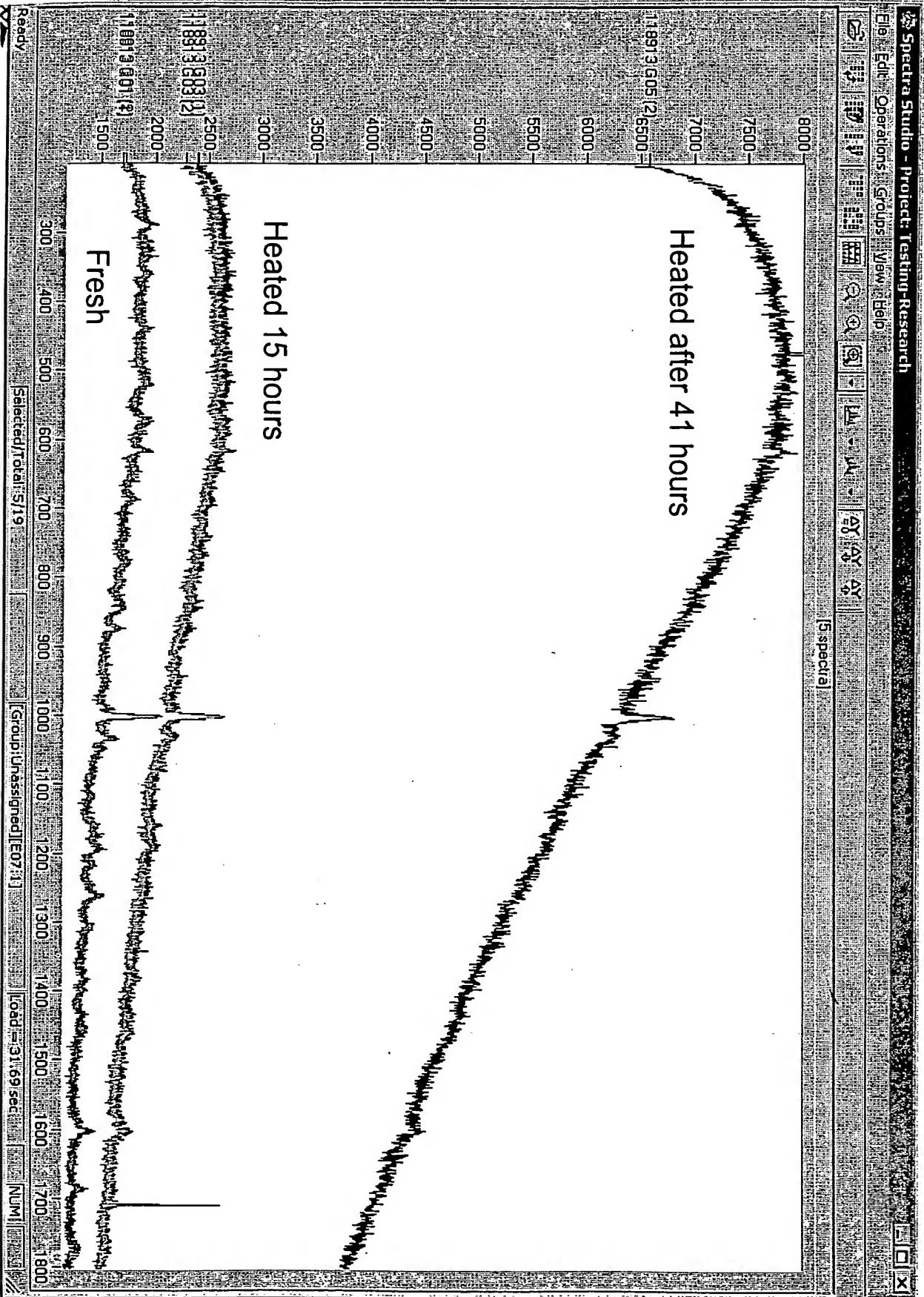
A---Fresh Sample
B---Heater 15 hours at 80 °C
C---Heated 41 hours at 80 °C

Signal Intensity



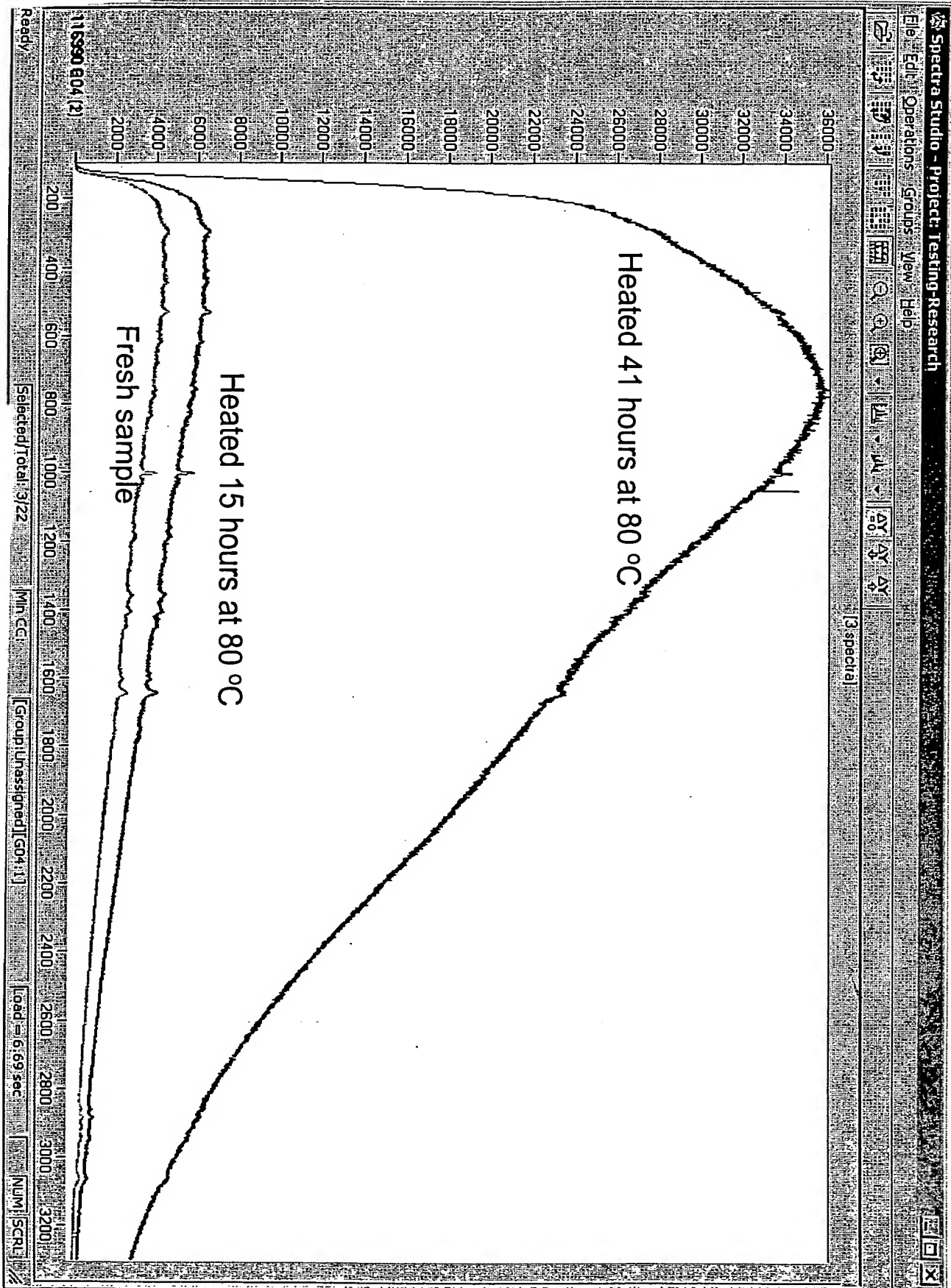
Raman Shift cm⁻¹

Figure 9B
Fluorescence of Ampicillin tri-hydrate at 632.8 nm excitation



Fluorescence of Cephalexin by 632.8 nm excitation

Figure 9C



Fluorescence Excitation Spectra of Amoxicillin & its decomposition

Products by detecting at 680 nm

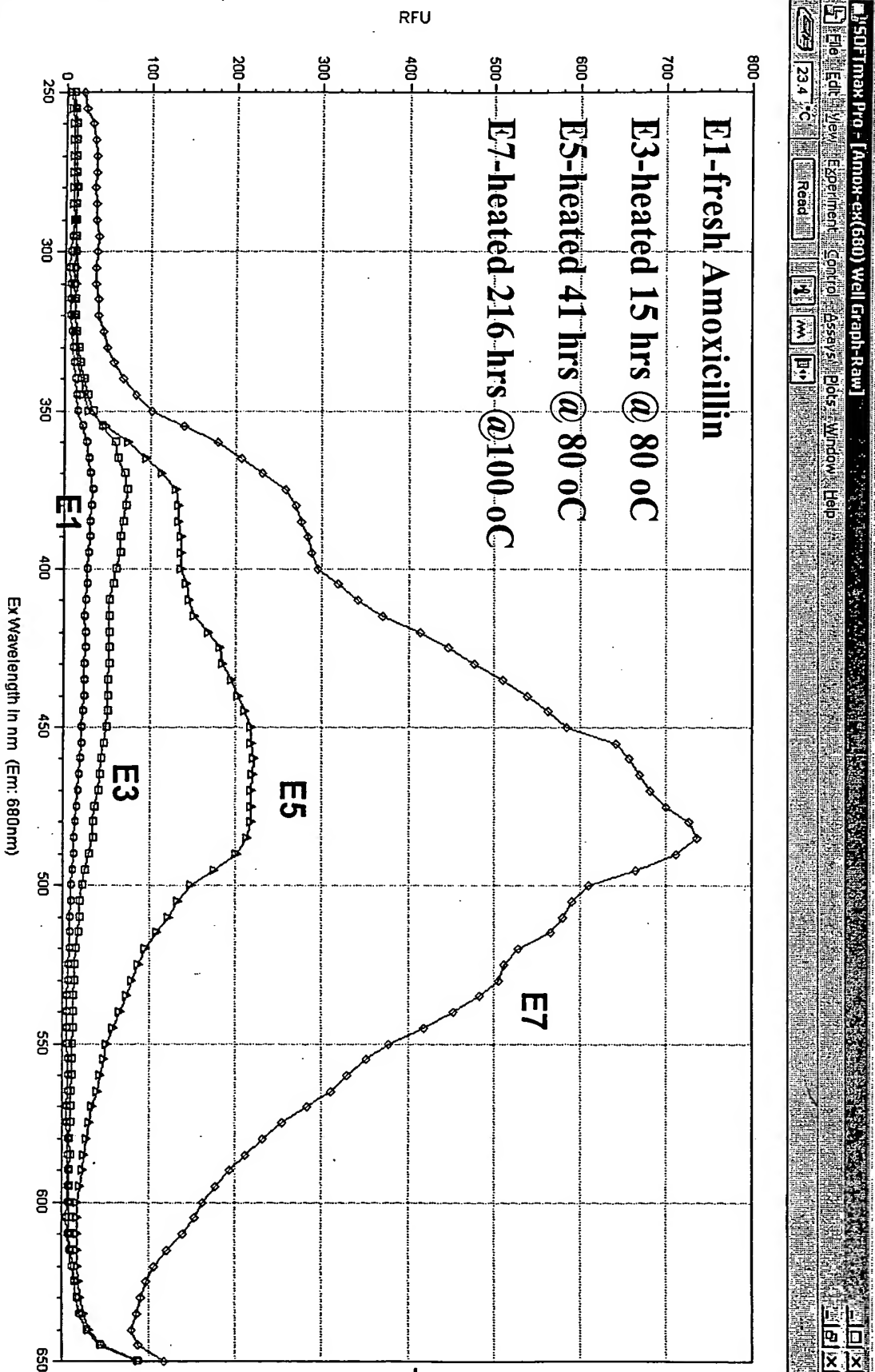


Figure 9D

Raman at 785 nm excitation: Ampicillin Trihydrate

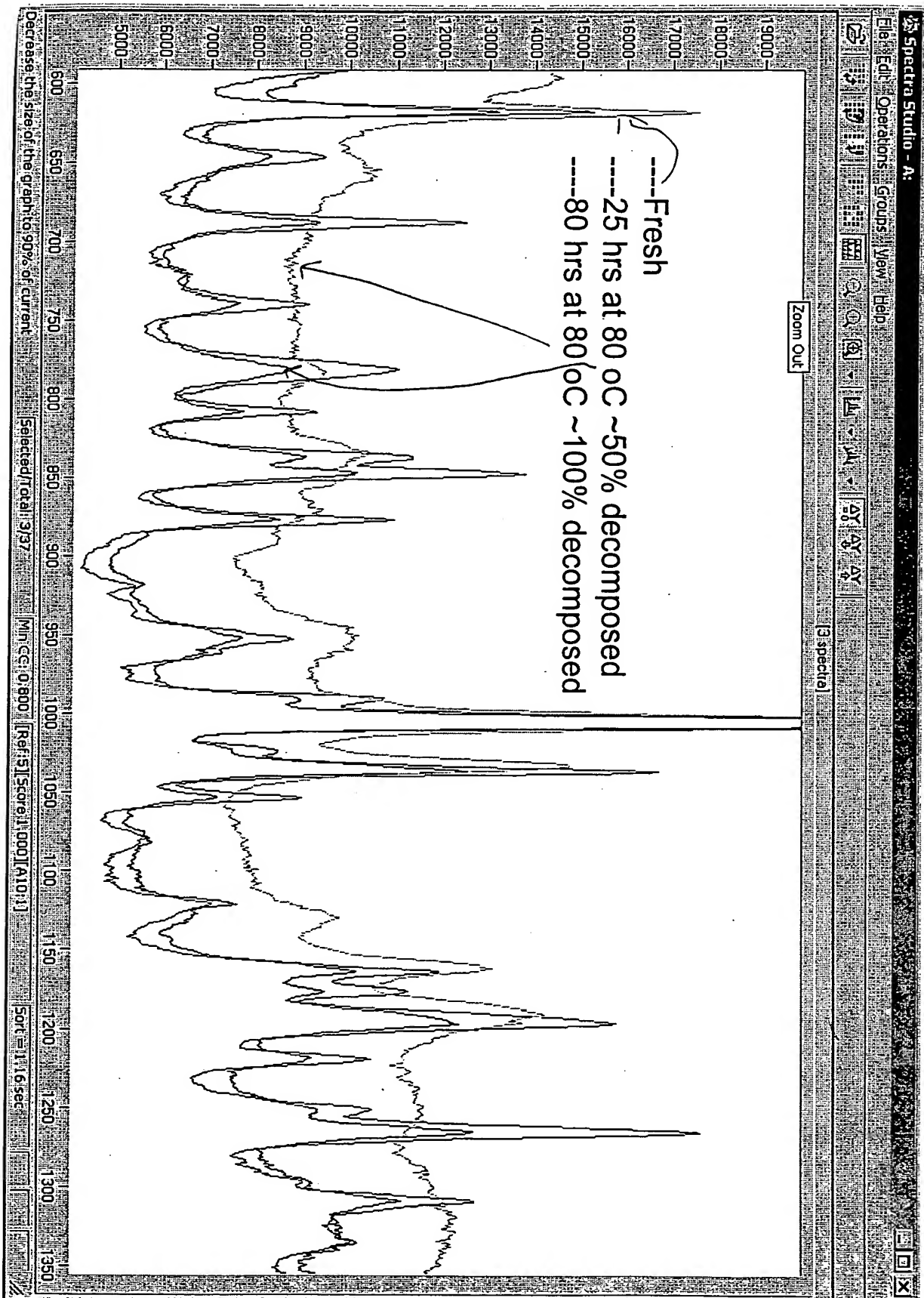


Figure 10A

Stability of Amoxicillin by FT-Raman at 1064 nm excitation

Figure 10B

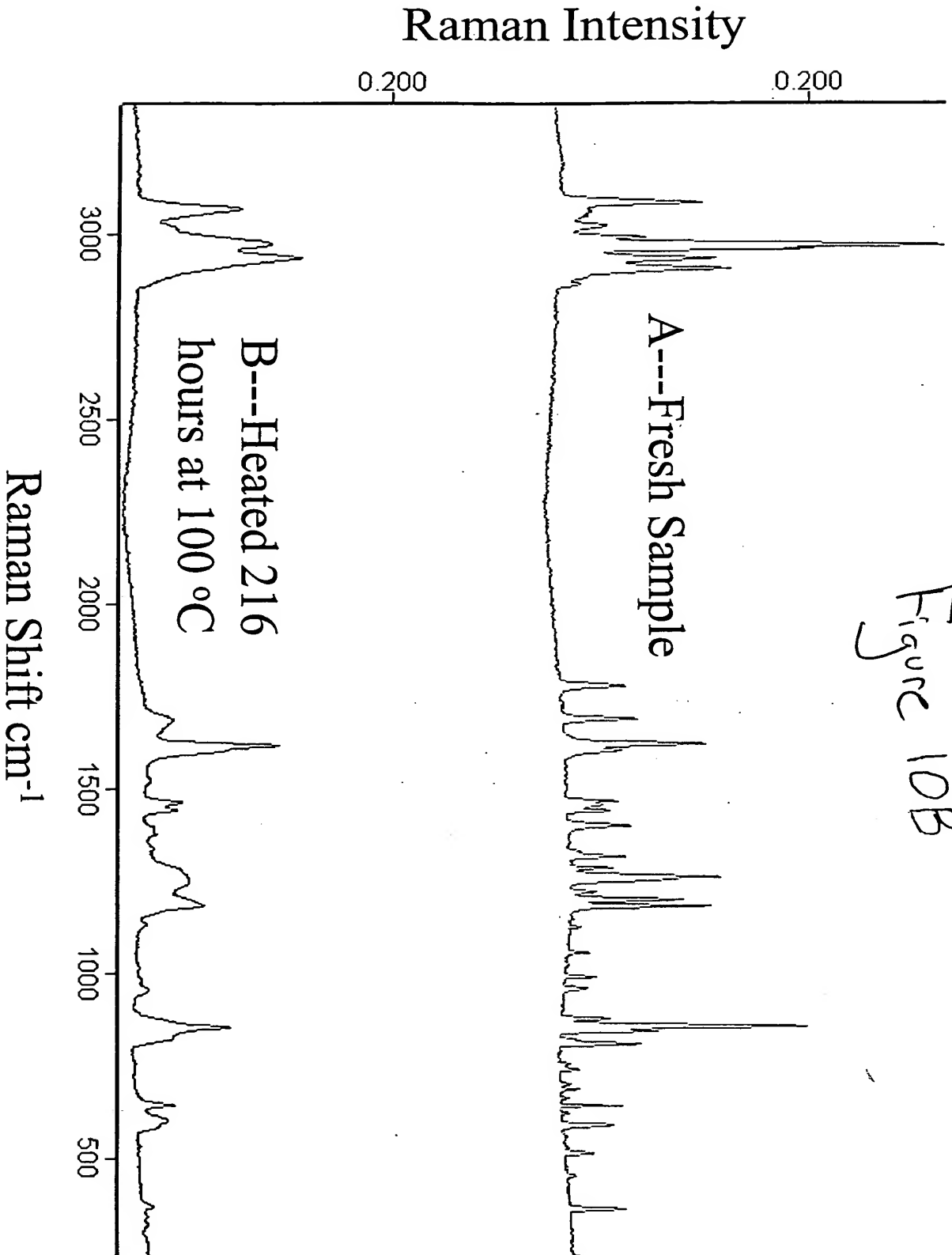
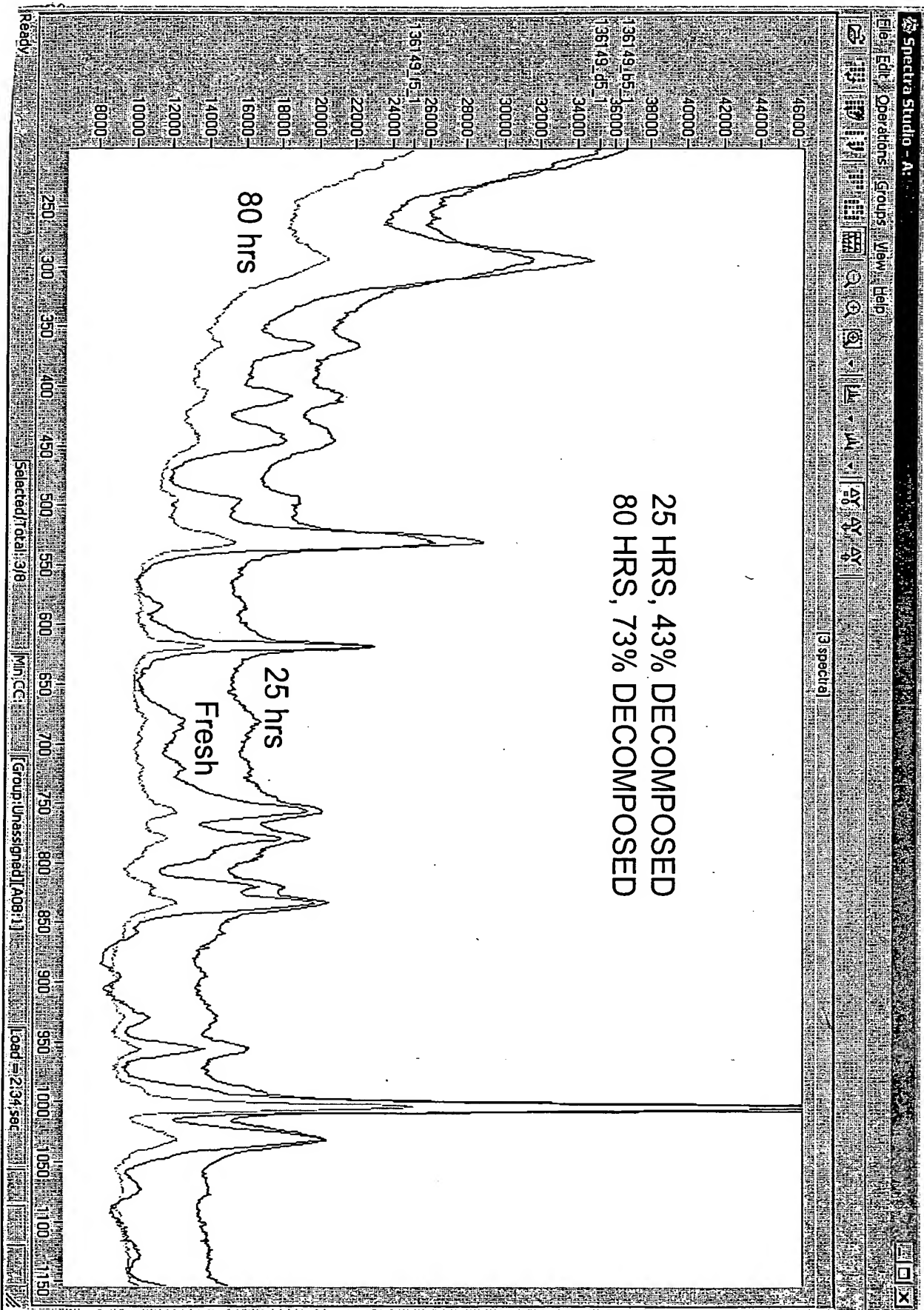


Figure 10C
Raman at 785 nm excitation: Cephalexin hydrate



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Stability of Amoxicillin after heating by XRD

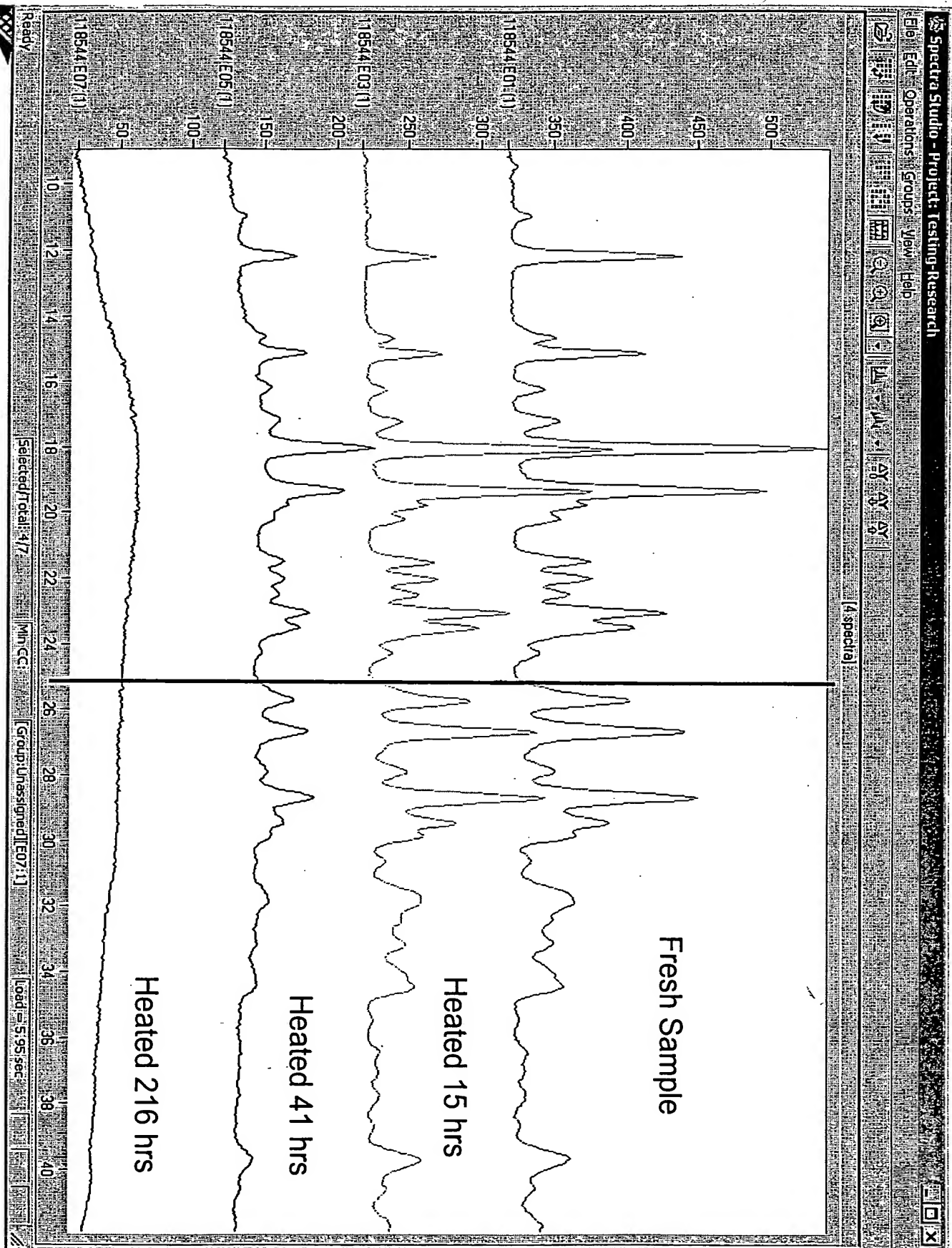


Figure 11.

FTNIR of

amoxicillin powder

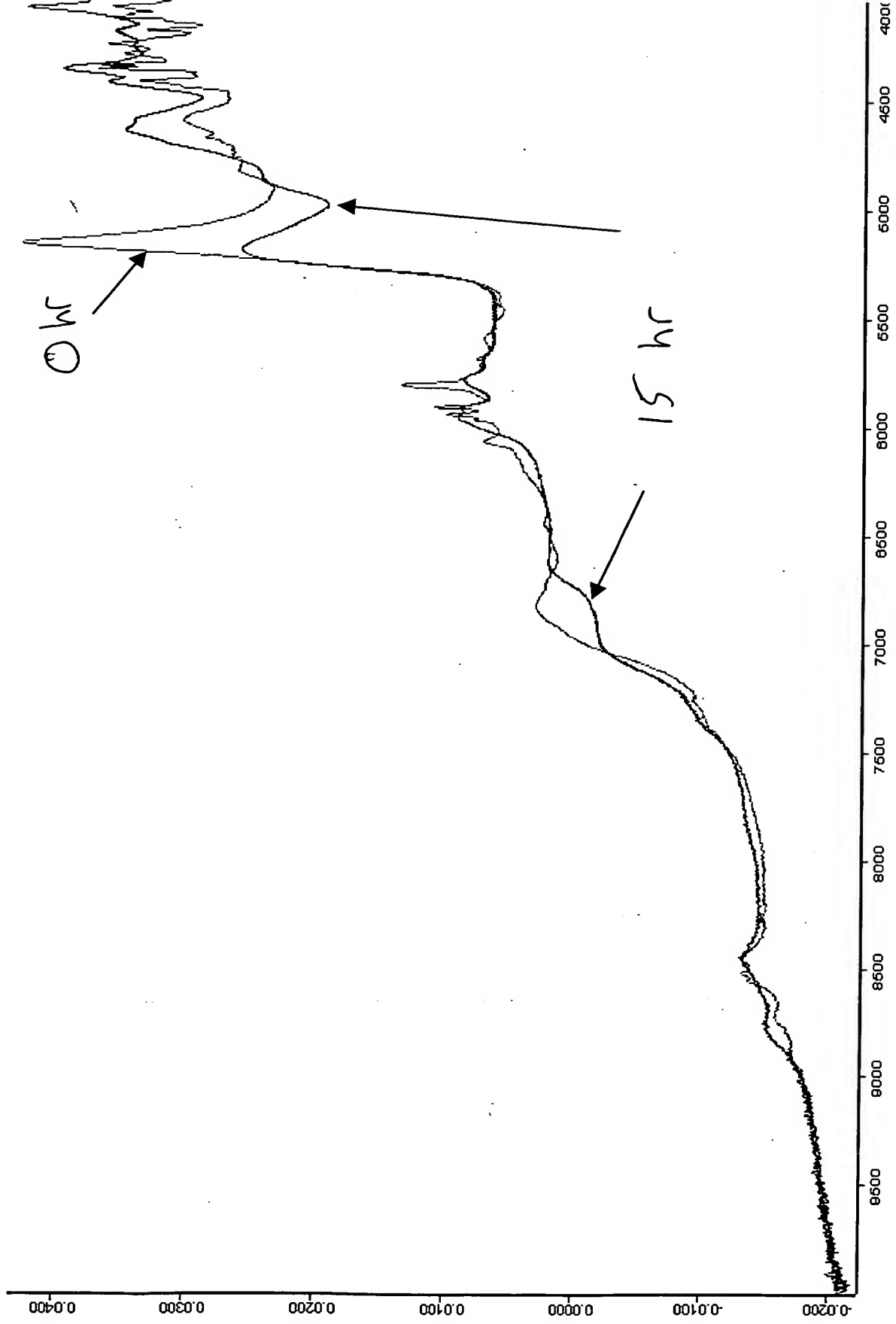
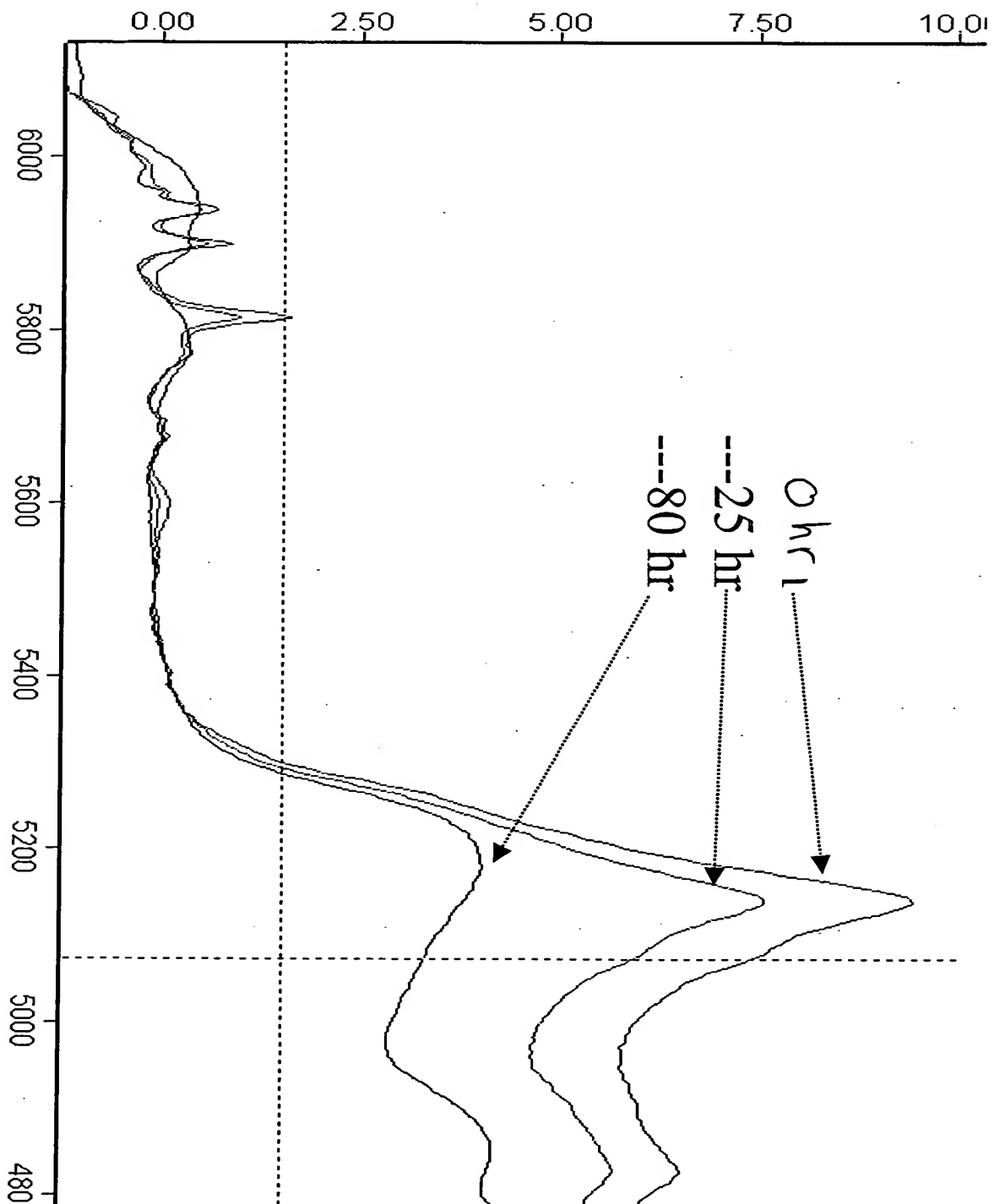


Figure 12 A

Figure 12B
FTNIR of Cephalexin powder in 8-mL vials after 0, 25, 80 hrs @ 80 °C.



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FTIR Diffuse Reflectance of amoxicillin and its 99.5% decomposed powder after KM transform

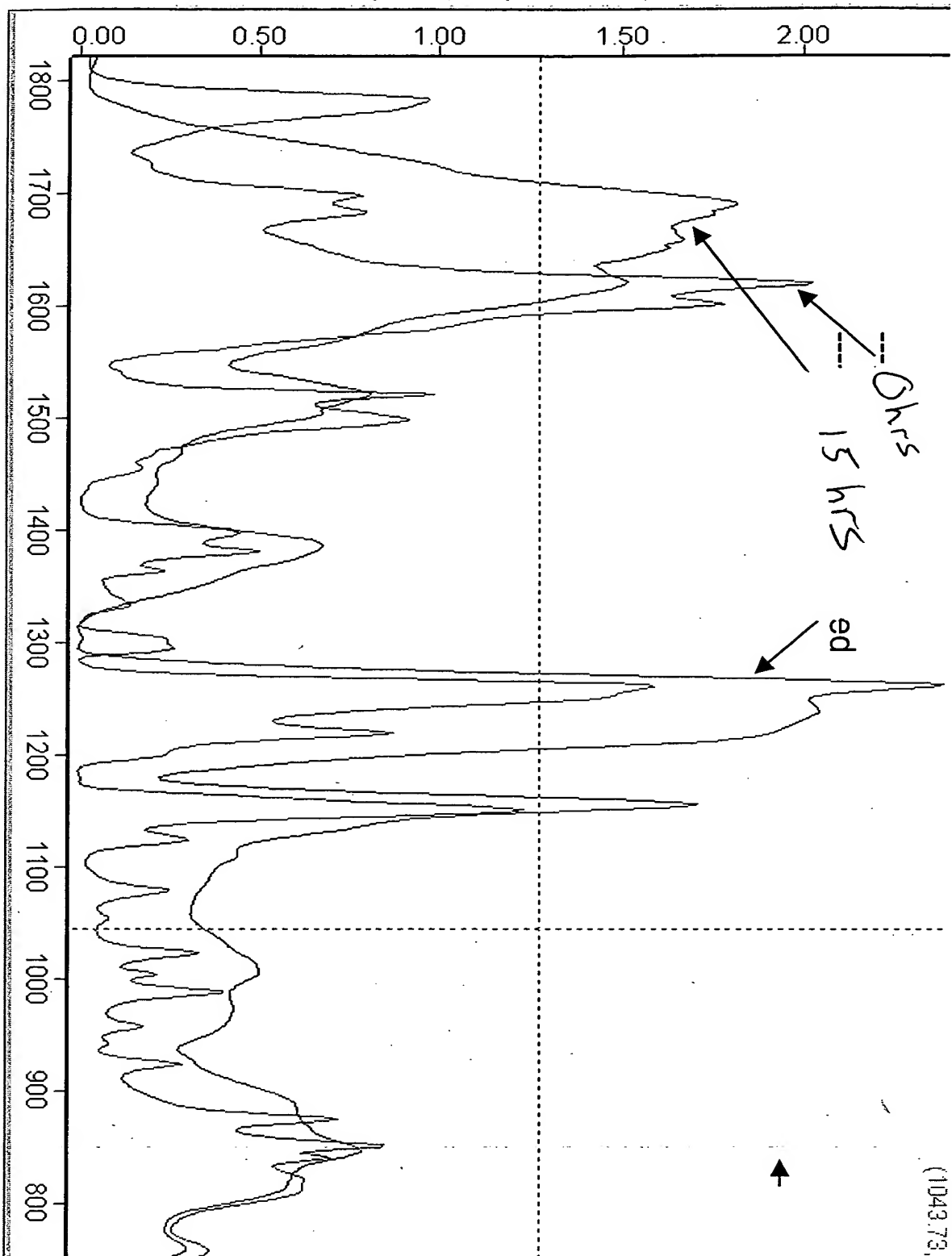
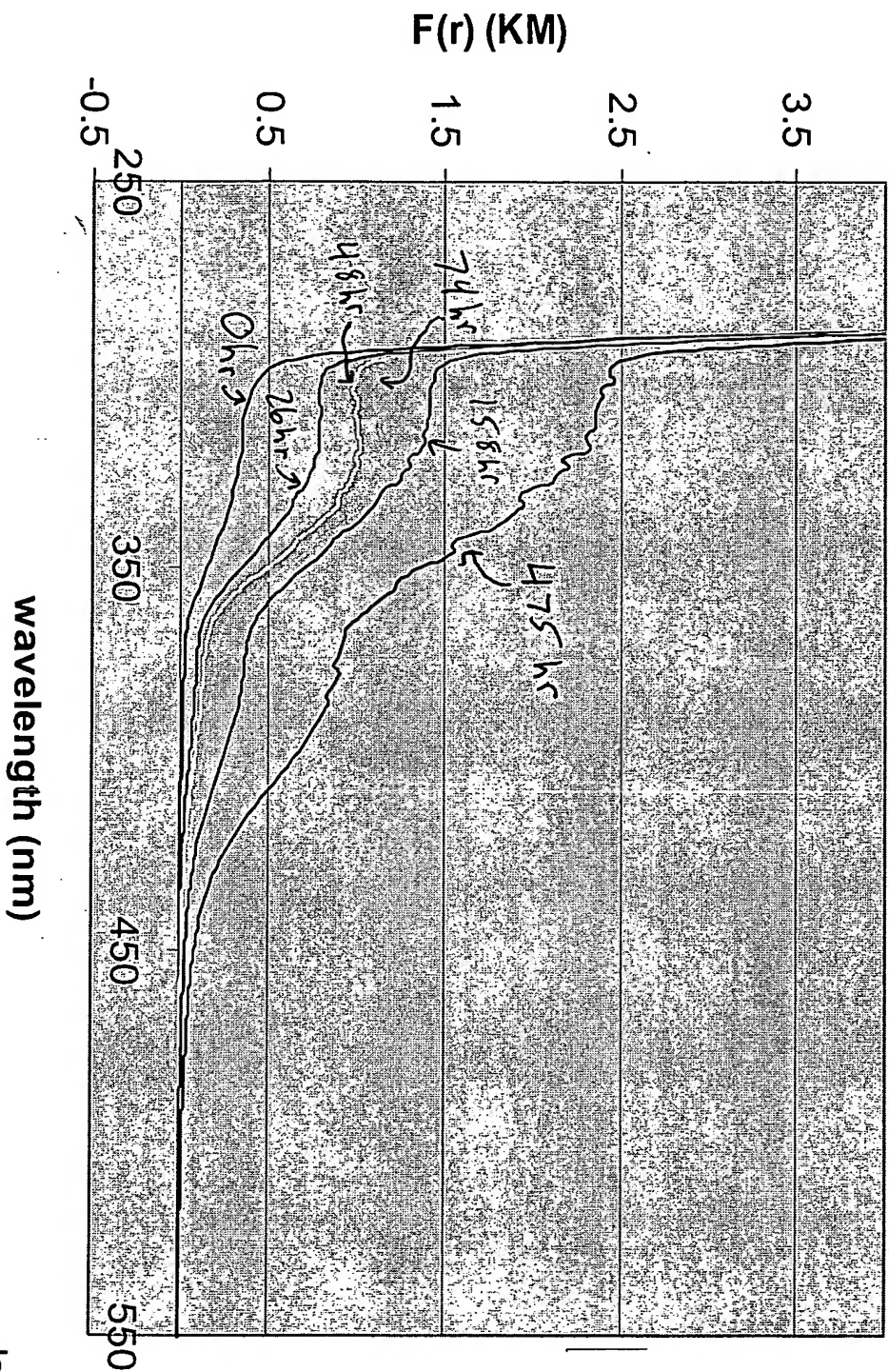


Figure 13

UV-Vis diffuse reflectance measurement

Figure 14

Amoxicillin & its decomposition at 80 oC



ls_test1.xls

Figure 15A

Colors of Amoxicillin Batch-1 Samples

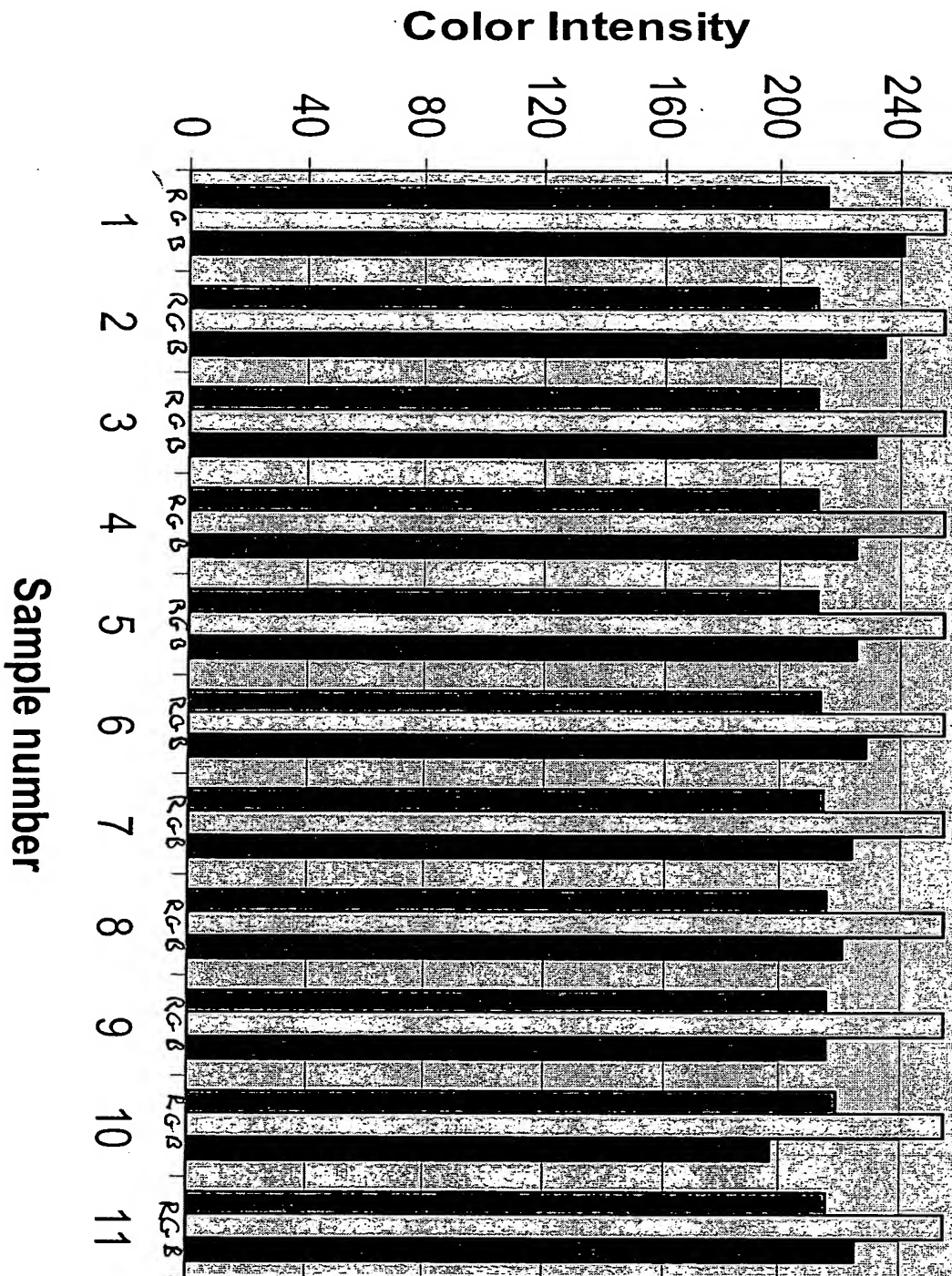


Figure 15B

Color of Amoxicillin Batch-2 samples

